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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/068,277	02/06/2002	Lin-Ren Shiue	JCLA8620	9727

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EXAMINER

WILKINS III, HARRY D

ART UNIT

PAPER NUMBER

1742

DATE MAILED: 10/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/068,277

Applicant(s)

SHIUE ET AL.

Examiner

Harry D Wilkins, III

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1 and 6 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by McMEnamin (ZA 71 / 7184).

McMenamin teaches (see page 4, lines 3-9 and 16-17) an electrolytic cell comprising two grid (mesh) electrodes, the electrodes being attached to DC power source continuously, and an electrolyte comprising NaCl (neutral salt). The first electrode is an anode and the second electrode is a cathode.

Though McMEnamin does not teach the formation of ozone, the formation of ozone is only the intended use of the claimed apparatus, and therefore, is not given any patentable weight.

Regarding claim 6, McMEnamin teaches (see page 2, lines 21-23) using NaCl as the electrolyte.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. Claims 1, 2, 6-8 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over McMenamin (ZA 71 / 7184) in view of Applicant's admission of prior art.

The teachings of McMenamin are described above in paragraph no. 2.

McMenamin does not teach using the apparatus to form ozone.

However, Applicant admits as prior art (see paragraph no. 4 of the specification) that the electrolytic generation of ozone was known in the prior art, particularly by having a β -PbO₂ coating on the surface of the anode. The ozone has the ability to disinfect water (see paragraph no. 2).

Therefore, it would have been obvious to one of ordinary skill in the art to have adapted the water purifier of McMenamin to produce ozone by adding a β -PbO₂ coating on the surface of the anode as taught by Applicant's admission of prior art to further promote purifying of the water.

Regarding claim 2, McMenamin does not teach a β -PbO₂ coating on the surface of the anode. Applicant's admission (see paragraph no. 4) teaches that a β -PbO₂ coating on the surface of the anode allows the anode to produce ozone. Therefore, it would have been obvious to one of ordinary skill in the art to have added a β -PbO₂ coating on the surface of the anode for the purpose of causing the formation of ozone.

Regarding claim 6, McMenamin teaches (see page 2, lines 21-23) using NaCl as the electrolyte.

Regarding claims 7 and 8, McMenamin teaches (see page 4, lines 16-17) using a "battery charger or the like" to supply the DC power. It would have been within the

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expected skill of a routineer in the art to have chosen a conventional type battery to supply the power.

Regarding claim 14, McMenamin does not disclose any heating or cooling. Thus, one of ordinary skill in the art would have expected the temperature to inherently include room temperature.

5. Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over McMenamin in view of Applicant's admission of prior art as applied to claims 1, 2, 6-8 and 14 above, and further in view of Lin et al (US 5,668,420).

The teachings of McMenamin in view of Applicant's admission are discussed above in paragraph no. 4.

McMenamin in view of Applicant's admission do not teach making the anode of cathode from titanium coated with a material such as platinum, iridium oxide or tin oxide.

Lin et al teach (see paragraph spanning cols. 9 and 10) using electrodes made of DSAs, or Dimensionally Stable Alloys. These DSAs are titanium metals coated with iridium oxide. The dimensional stability provides the advantage of not being worn out during electrolysis so that they don't have to be replaced, thereby reducing maintenance.

Therefore, it would have been obvious to one of ordinary skill in the art to have substituted the DSA taught by Lin et al for the material of the anode and cathode of McMenamin because the DSA (Ti-IrO) provide the advantage of dimensional stability, thereby reducing maintenance.

Regarding claim 4, McMenamin does not teach that the anode is coated with β - PbO_2 . Applicant's admission (see paragraph no. 4) teaches that a β - PbO_2 coating on the surface of the anode allows the anode to produce ozone. Therefore, it would have been obvious to one of ordinary skill in the art to have added a β - PbO_2 coating on the surface of the anode for the purpose of causing the formation of ozone.

6. Claims 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over McMenamin in view of Applicant's admission as applied to claims 1, 2, 6-8 and 14 above, and further in view of Wong et al (US 5,756,054), with support from Matsuura (JP 08-126707), and Yen et al (US 5,426,561).

The teachings of McMenamin in view of Applicant's admission are discussed above in paragraph no. 4. McMenamin teaches (see page 4, lines 16-17) using a battery charger "or the like" to supply the DC power. It would have been within the expected skill of a routineer in the art to have chosen a conventional type battery to supply the power.

McMenamin in view of Applicant's admission do not teach that the DC power source comprises circuitry of a supercapacitor and an oscillator.

Wong et al teach (see col. 1, lines 5-10 and col. 2, lines 2-3 and 18-22) that for the electrolytic production of ozone, a pulsed current improves ozone production. While Wong et al do not go into the electronics area of the invention, the voltage pulses would have been created by a DC power source and an oscillator circuit. It would have been obvious to use a conventional oscillator circuit, such as the self-excitation circuit described by Matsuura.

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Therefore, it would have been obvious to one of ordinary skill in the art to have added an oscillator to the DC power source, as taught by Wong et al, for the purpose of creating a pulsed current to improve the ozone production.

Yen et al teach (see sentence spanning cols 3 and 4) that supercapacitors were useful for improving pulse power devices.

Therefore, it would have been obvious to have included a supercapacitor in the pulsing current power source of McMenamin in view of Applicant's admission an Wong et al because Yen et al teach that the supercapacitors improved pulse power devices.

Regarding claim 10, McMenamin teaches (see page 4, lines 16-17) using a battery charger "or the like" to supply the DC power. It would have been within the expected skill of a routineer in the art to have chosen a conventional type battery to supply the power.

Regarding claim 11, McMenamin does not teach the oscillator. The pulsed current of Wong et al would use an oscillator to generate the pulses, however, Wong does not teach using a self-excitation multi-level oscillator. Matsuura teaches a conventional self-excitation oscillator, and it would have been obvious to one of ordinary skill in the art to use any conventional oscillator in order to achieve the desired current/voltage pulsing scheme.

Regarding claim 12, McMenamin does not teach that the yield of the ozone generation is controlled by varying a duty ratio of the DC power source. However, Applicant admits as prior art (see paragraph no. 4) that the current affects the yield of the ozone generation. Therefore, it would have been obvious to one of ordinary skill in

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the art to have adjusted the duty ratio of the circuitry (thus manipulating the current flowing into the electrolytic cell) to control the yield of ozone generation.

7. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over McMenamin in view of Applicant's admission as applied to claims 1, 2, 6-8 and 14 above, and further in view of Foller (US 4,541,989).

The teachings of McMenamin and Applicant's admission are described above in paragraph no. 4.

McMenamin and Applicant's admission do not teach using a bubbler for supplying bubbles into the electrolyte.

Foller teaches (see paragraph spanning cols. 2 and 3) that bubbles moved across the surface of an electrode which is producing ozone will help to dilute the ozone gas.

Therefore, it would have been obvious to one of ordinary skill in the art to have added a bubbler to the apparatus of McMenamin and Applicant's admission for the purpose of facilitating the removal of the ozone bubbles from the anode surface and dissolving them in the bulk electrolyte (water), thereby providing the disinfecting function.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry D Wilkins, III whose telephone number is 703-305-9927. The examiner can normally be reached on M-Th 10:00am-8:30pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V King can be reached on 703-308-1146. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Harry D Wilkins, III
Examiner
Art Unit 1742

hdw

ROY KING
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